

laboratories for aid, neither glass, nor iron, nor hemp, nor adamant itself, will suffice to defy them. If any material exists, the characters of which are so thoroughly dissimilar from those of any substance known to occur at the bottom of the sea as to render it in the highest degree improbable that such creatures as live there could improvise means to pierce it, whilst, at the same time, it would secure perfect insulation of the telegraphic wire, *caoutchouc is that material.*

VI.—*Improved Method of making Microscopic Sections.*

By G. C. WALLICH, M.D., F.L.S.

*To the Editors of the Annals and Magazine of Natural History.*

GENTLEMEN,

Having devised a method of producing the finest sections of minute microscopic objects, such as Foraminifera, Diatomaceæ, and the like, which will, I think, prove of great service, I beg leave to lay it before your readers.

Hitherto, in making sections of any minute organized particles, the practice has been to mix the material with Canada balsam hardened over the spirit-lamp in the usual manner, and to grind down the balsam and its contents on a glass slide, until of the requisite degree of thinness,—a thin glass cover being placed on the ground surface, in order to complete the operation.

This plan, however, possesses the great disadvantage of affording only one ground side for microscopic examination, namely the one next to the observer's eye; whilst, the surface next the glass slide being in its natural state, not only is perfect definition prevented, but it is impossible to ensure anything like a uniform thickness of the various minute sections present.

To obviate this defect, I simply substitute, for the glass slide employed in the early stage of the process, a thin film of mica, mixing the material to be operated on with the balsam, and hardening it by heat in the usual mode. The slip of mica so prepared is now transferred to a glass slide, and secured by balsam as before, the mica being next to the glass. The operation of grinding down the exposed surface having been carried to the desired limit, and the surface carefully washed with water in order to carry off all loose particles, heat is applied to the under surface of the slide in order to drive off the last remnant of moisture left from the process of grinding-down. The slide is then heated just sufficiently to admit of the detachment of the mica-film and its burden *in situ*. A clean slide is now gently heated, and the mica-film, with its balsam-surface

downwards, is made to adhere to it. The grinding-down of the remaining surface is now accomplished, the superincumbent film of mica yielding to the hone or grinding disk with the greatest readiness. After washing, as before, a thin glass cover is applied, and the operation is complete.

In order to ensure the non-displacement of the ground surfaces, and also the perfect parallelism of the minute ground objects to the surface upon which they rest (a matter of the highest importance wherever clear definition is demanded), great care is necessary in heating the balsam only to such a degree as to produce sufficient hardness, and permanently to secure the objects.

With due caution, the finest organic or inorganic particles of matter may in this manner be ground into sections, and their surfaces reduced so as entirely to obviate the diffraction of the rays of light attendant on the interposition of surfaces which are not parallel to one another.

I remain, Gentlemen,

Your most obedient Servant,

G. C. WALLICH.

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VII.—*Notice of a new Species of Damaster from Japan.*

By ARTHUR ADAMS, F.L.S. &c.

*Damaster Fortunei*, A. Adams.

*D. capite et thorace violascentibus nitidis, transversim ruguloso-punctatis; thoracis lateribus dilatatis; elytris triliratis, liris tuberculosus, interstitiis verrucis depressiusculis et punctis elevatis scabrisculis, apice angustato sed vix producto et non aculeato.*

*Hab.* Awa-Sima, Japan.

In this species, which is of the same size as *D. blaptoides*, but of stouter build, the head and thorax are of a fine violet tint, the head is wider between the eyes than in the known species, the sides of the thorax are dilated, the body is considerably wider and more ovate, and the elytra, instead of being simply sulcate, are furnished with three slightly prominent tubercular ridges, with wart-like tubercles and elevated points filling up the interstices.

I have much pleasure in naming it after Mr. Fortune, who has just returned from Japan, and in conjunction with whom I compared it, at Shanghai, with a careful figure of *D. blaptoides* supplied to him by Mr. Adam White.